

WHAT IS CLAIMED IS:

1. A single field replaceable unit, comprising:
- a processor;
 - a system memory coupled to said processor;
 - a network interface for connecting to a network;
 - one or more drive controllers coupled to the processor; and
 - an array of disk drives coupled to said one or more drive controllers and configured to be organized into one or more RAID logical volumes and presented to client machines as one or more filesystems through said network interface;
- wherein said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives are packaged as a single field replaceable unit (FRU) so that said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives are configured not to be individually field serviceable or field replaceable.
2. The unit as recited in claim 1, further comprising a motherboard, wherein said processor, said system memory, said network interface, said one or more drive controllers, and said array of disk drives are attached to said motherboard so as not to be field removable.

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1 3. The unit as recited in claim 1, further comprising one or more fans configured to
2 flow air over said array of disk drives and said processor, wherein said one or more fans
3 are packaged as part of said single field replaceable unit and are configured not to be
4 individually field serviceable or field replaceable.

1 4. The unit as recited in claim 3, wherein said one or more fans comprises a row of
2 fans positioned between said array of disk drives and said processor.

1 5. The unit as recited in claim 1, wherein said one or more drive controllers
2 comprise four ATA-type drive interfaces, and wherein said array of disk drives comprises
3 eight ATA-type disk drives.

1 6. The unit as recited in claim 1, wherein said array of disk drives are configured to
2 provide storage for at least a quarter of a terabyte of data in said single field replaceable
3 unit.

1 7. The unit as recited in claim 1, further comprising a power supply configured to
2 supply power to said processor, said system memory, said network interface, said one or
3 more drive controllers, and said array of disk drives, wherein said power supply is part of
4 said single field replaceable unit and is configured not to be individually field serviceable
5 or field replaceable.

1 8. The unit as recited in claim 1, wherein said processor is configured to execute a
2 UNIX-type operating system and present said array of disk drives as a Network File
3 System (NFS) or Common Internet File System (CIFS) filesystem to a network through
4 said network interface so that the filesystem can be mounted by client machines.

1 9. The unit as recited in claim 9, wherein the filesystem is configured to be
2 accessible by UNIX clients or Windows clients.

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1 10. The unit as recited in claim 1, wherein said processor is configured to execute a
2 Linux-type operating system and present said array of disk drives as a Network File
3 System (NFS) or Common Internet File System (CIFS) filesystem to a network through
4 said network interface so that the filesystem can be mounted by client machines.

1 11. The unit as recited in claim 10, wherein the filesystem is configured to be
2 accessible by UNIX clients or Windows clients.

1 12. The unit as recited in claim 1, wherein said single field replaceable unit is
2 configured to provide office network services including issuing IP addresses to client
3 machines, web page server services, and electronic mail services for client machines
4 through said network interface.

1 13. The unit as recited in claim 1, wherein the number of physical disk drives of said
2 array of disk drives is fixed in said single field replaceable unit so that additional physical
3 disk drives cannot be added to said single field replaceable unit in the field.

1 14. The unit as recited in claim 1, wherein said single field replaceable unit is
2 configured to be rack-mounted and has a height less than or equal to 1.75 inches.

1 15. A system, comprising:
2
3 a single field replaceable unit (FRU) comprising:
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5 one or more processors;
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7 a network interface coupled to said one or more processors; and
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9 an array of disk drives coupled to said one or more processors and said
10 network interface, wherein said array of disk drives is configured

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11 to be provided as one or more filesystems through said network
12 interface;

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14 wherein said processor, said network interface, and said array of disk
15 drives are configured not to be individually field serviceable or
16 field replaceable;

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18 a network coupled to said network interface of said single field replaceable unit;
19 and

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21 one or more client machines coupled to said network and configured to access
22 over said network said one or more filesystems provided by said array of
23 disk drives within said single field replaceable unit.

1 16. The system as recited in claim 15, wherein said array of disk drives within said
2 single field replaceable unit are configured into RAID logical volumes.

1 17. The system as recited in claim 15, wherein said array of disk drives within said
2 single field replaceable unit are ATA-type disk drives.

1 18. The system as recited in claim 15, wherein said single field replaceable unit is
2 configured to provide storage for at least a quarter of a terabyte of data.

1 19. The system as recited in claim 15, wherein said single field replaceable unit is
2 configured to provide office network services including issuing IP addresses to said client
3 machines, web page server services, and electronic mail services for said client machines
4 over said network.

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1 20. The system as recited in claim 15, wherein the number of physical disk drives of
2 said array of disk drives is fixed in said single field replaceable unit so that additional
3 disk drives cannot be added to said single field replaceable unit in the field.

1 21. The system as recited in claim 15 comprising a storage rack having multiple ones
2 of said single field replaceable unit coupled together over said network.

1 22. A method for providing computing resources, comprising:
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3 assembling a processor, network interface and array of disk drives as a single field
4 replaceable unit (FRU) so that said processor, said network interface, and
5 said array of disk drives are configured not to be individually field
6 serviceable or field replaceable, and wherein said processor, said network
7 interface, and said array of disk drives are configured to provide one or
8 more filesystems to client machines through said network interface;
9
10 preinstalling software on said single field replaceable unit configurable to
11 organize said array of disk drives into one or more RAID logical volumes
12 to be presented to client machines as one or more filesystems through said
13 network interface;
14
15 after said assembling and said preinstalling, shipping said single field replaceable
16 unit to a user; and
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18 replacing said single field replaceable unit as a whole upon failure, wherein said
19 single field replaceable unit has no serviceable internal parts.

1 23. The method as recited in claim 22, wherein the storage capacity of said single
2 field replaceable unit is not individually upgradeable, the method further comprising

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3 upgrading the computer resources by the user installing one or more additional ones of
4 said single field replaceable unit.

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2 24. A method for providing computing resources, comprising:

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4 configuring a plurality of field replaceable storage units in an enclosure, wherein
5 each field replaceable storage unit comprises an array of hard drives and is
6 configured to make the hard drives available on a network;

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8 detecting a failure in one of the field replaceable storage units; and

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10 replacing as a whole the field replaceable storage unit having the failure.

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12 25. The method as recited in claim 24, further comprising expanding the computing
13 resources by adding one or more additional field replaceable storage units to the
14 enclosure, wherein each additional field replaceable storage unit comprises an array of
15 hard drives and is configured to make the hard drives available on the network.

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17 26. The method as recited in claim 24, wherein the array of hard drives within each
18 field replaceable storage unit is configured into RAID logical volumes.

1 27. The method as recited in claim 24, wherein the array of hard drives within each
2 field replaceable storage unit are ATA-type disk drives.

1 28. The method as recited in claim 24, wherein each field replaceable storage unit is
2 configured to provide storage for at least a quarter of a terabyte of data.

1 29. The method as recited in claim 24, wherein the number of hard drives of each
2 array of hard drives is fixed in each field replaceable storage unit so that additional hard
3 drives cannot be added to individual field replaceable units in the field.

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30. A system, comprising:

an enclosure configured to hold a plurality of individual field replaceable storage units, wherein each individual field replaceable storage unit comprises:

one or more processors; and

an array of disk drives coupled to said one or more processors, wherein said processor and said array of disk drives are configured to provide one or more filesystems to a network;

wherein said enclosure is configured so that each individual field replaceable storage unit is individually removable or insertable, wherein each individual field replaceable storage unit is configured so that said one or more processors and said array of disk drives are configured not to be individually field serviceable or field replaceable so that failed one of said individual field replaceable storage units are replaced in said enclosure as a whole.